

**SUBCHAPTER G : LICENSING REQUIREMENTS FOR SOURCE MATERIAL  
(URANIUM OR THORIUM) RECOVERY AND PROCESSING FACILITIES**

§§336.601-336.606, 336.613-336.629, 336.636

June 5, 1997

**§336.601. Scope and General Provisions.**

(a) This subchapter establishes the criteria, terms and conditions under which the commission issues licenses for source material recovery and processing, including the disposal of byproduct material resulting from the facility's source material recovery and processing operations. This subchapter also provides for the licensing of persons who receive byproduct material from others for disposal. As used in this subchapter, "byproduct material" includes only that defined in §336.2, subparagraph (B), of this title (relating to Definitions) but not that defined in subparagraph (A).

(b) This subchapter does not apply to:

(1) the mining, transport, or transfer of ores containing source material without regard to quantity;

(2) persons who own source material without regard to quantity or who receive, possess, use, or transfer source material, except for the purpose of source material recovery and processing; or

(3) persons who receive, possess, use, or transfer unrefined and unprocessed ore containing source material.

(c) No person may engage in source material recovery or processing or disposal of byproduct material except as authorized in a specific license issued under this subchapter.

(d) Unless otherwise exempted, the applicant shall not commence construction at the site until the commission has issued the license. Commencement of construction prior to issuance of the license shall be grounds for denial of a license.

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**§336.602. Definitions.**

Terms used in this subchapter are defined in §336.2 of this title (relating to Definitions). Additional terms used in this subchapter have the following definitions:

Aquifer - A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs. Any saturated zone created by uranium or thorium recovery operations or tailings or waste disposal would not be considered an aquifer unless the zone is or potentially is:

(A) hydraulically interconnected to a natural aquifer;

(B) capable of discharge to surface water; or

(C) reasonably accessible because of migration beyond the vertical projection of the boundary of the land transferred for long-term government ownership and care in accordance with §336.629 of this title (relating to Land Ownership of Tailings or Waste Disposal Sites).

As expeditiously as practicable considering technological feasibility - For the purposes of §336.622 of this title (relating to Closure Completion Milestones and Schedule), as quickly as possible considering the physical characteristics of the tailings and the site, the limits of "available technology" (as defined in this section), the need for consistency with mandatory requirements of other regulatory programs, and "factors beyond the control of the licensee" (as defined in this section). The phrase permits consideration of the cost of compliance only to the extent specifically provided for by use of the term "available technology."

Available technology - Technologies and methods for emplacing a final radon barrier on uranium or thorium mill tailings piles or impoundments. This term shall not be construed to include extraordinary measures or techniques that would impose costs that are grossly excessive as measured by practice within the industry (or one that is reasonably analogous), (e.g., by way of illustration only, unreasonable overtime, staffing, or transportation requirements, etc., considering normal practice in the industry; laser fusion of soils; etc.), provided there is reasonable progress toward emplacement of the final radon barrier. To determine grossly excessive costs, the relevant baseline against which costs shall be compared is the cost estimate for tailings impoundment closure contained in the licensee's approved reclamation plan, but costs beyond these estimates shall not automatically be considered grossly excessive.

Capable fault - Has the same meaning as defined in Section III(g) of Appendix A of 10 CFR Part 100 as amended through January 10, 1977 (42 FedReg 2052) (relating to Seismic and Geologic Siting Criteria for Nuclear Power Plants).

Closure - The activities following operations to decontaminate and decommission the buildings and site used to produce byproduct materials and reclaim the tailings and/or waste disposal area, including groundwater restoration, if needed.

Closure plan - The plan approved by the commission to accomplish closure.

Commencement of construction - Any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site, but does not include necessary borings to determine site characteristics or other pre-construction monitoring to establish background information related to the suitability of a site or to the protection of the environment.

Compliance period - Begins when the commission sets secondary groundwater protection standards and ends when the license is terminated and the site is transferred to the State or federal government for long-term care, if applicable.

Dike - An embankment or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials.

Disposal area - The area containing byproduct materials to which the requirements of §336.621 of this title (relating to Disposal Area Cover and Closure) apply.

Existing portion - That land surface area of an existing surface impoundment on which significant quantities of uranium or thorium byproduct materials had been placed prior to September 30, 1983.

Factors beyond the control of the licensee - Factors proximately causing delay in meeting the schedule in the applicable reclamation plan for the timely emplacement of the final radon barrier notwithstanding the good faith efforts of the licensee to complete the barrier in compliance with §336.622(a) of this title. These factors may include but are not limited to:

- (A) physical conditions at the site;
- (B) inclement weather or climatic conditions;
- (C) an act of God;
- (D) an act of war;
- (E) a judicial or administrative order or decision, or change to the statutory, regulatory, or other legal requirements applicable to the licensee's facility that would preclude or delay the performance of activities required for compliance;
- (F) labor disturbances;
- (G) any modifications, cessation or delay ordered by state, federal, or local agencies;
- (H) delays beyond the time reasonably required in obtaining necessary government permits, licenses, approvals, or consent for activities described in the reclamation plan proposed by the licensee that result from government agency failure to take final action after the licensee has made a good faith, timely effort to submit legally sufficient applications, responses to requests (including relevant data requested by the agencies), or other information, including approval of the reclamation plan; and
- (I) an act or omission of any third party over whom the licensee has no control.

Final radon barrier - The earthen cover (or approved alternative cover) over tailings or wastes constructed to comply with §336.621 of this title (excluding erosion protection features).

Groundwater - Water below the land surface in a zone of saturation. For purposes of this subchapter, groundwater is the water contained within an aquifer as defined in this section.

Hazardous constituent - Subject to §336.615(b) of this title (relating to Secondary Groundwater Protection), a constituent which meets all three of the following tests:

(A) The constituent is reasonably expected to be in or derived from the byproduct material in the disposal area;

(B) The constituent has been detected in the groundwater in the uppermost aquifer;  
and

(C) The constituent is listed in 10 CFR Part 40, Appendix A as amended through July 15, 1994 (59 FedReg 36035) (relating to Criteria Relating to the Operation of Uranium Mills and Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content), Criterion 13.

Leachate - Any liquid, including any suspended or dissolved components in the liquid, that has percolated through or drained from the byproduct material.

Licensed site - The area contained within the boundary of a location under the control of persons generating, storing, or disposing of byproduct materials under a license.

Liner - A continuous layer of natural or man-made materials, beneath or on the sides of a surface impoundment which restricts the downward or lateral escape of byproduct material, hazardous constituents, or leachate.

Maximum credible earthquake - An earthquake which would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

Milestone - An action or event that is required to occur by an enforceable date.

Operation - The period of time during which a uranium or thorium mill tailings pile or impoundment is being used for the continued placement of byproduct material or is in standby status for such placement. A pile or impoundment is in operation from the day that byproduct material is first placed in the pile or impoundment until the day final closure begins.

Point of compliance - The site-specific location in the uppermost aquifer where the groundwater protection standard must be met. The objective in selecting the point of compliance is to provide the earliest practicable warning that an impoundment is releasing hazardous constituents to the groundwater. The point of compliance is selected to provide prompt indication of groundwater contamination on the hydraulically downgradient edge of the disposal area.

Processing - Possession, use, storage, extraction of material, transfer, volume reduction, compaction, or other separation incidental to recovery of source material.

Reclamation plan - For the purposes of §336.622 of this title, the plan detailing activities to accomplish reclamation of the tailings or waste disposal area in accordance with the technical criteria of this subchapter. The reclamation plan must include a schedule for reclamation milestones that are key to the completion of the final radon barrier, including as appropriate, but not limited to, wind blown tailings retrieval and placement on the pile, interim stabilization (including dewatering or the removal of freestanding

liquids and recontouring), and final radon barrier construction. Reclamation of tailings or wastes must also be addressed in the closure plan. The detailed reclamation plan may be incorporated into the closure plan.

Surface impoundment - A natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well.

Uppermost aquifer - The geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary.

Waste - Byproduct material as it is defined in §336.2, subparagraph (B), of this title.

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### **§336.603. Filing of Application.**

(a) An application for a license, or for renewal or amendment of a license must clearly demonstrate how the requirements of this section, §336.604 of this title (relating to General Requirements for Issuance of a License), §336.605 of this title (relating to Special Requirements for Issuance of a License), the technical requirements of this subchapter, §336.627 of this title (relating to Financial Assurance Requirements), §336.628 of this title (relating to Long-Term Care and Surveillance Requirements), and §336.629 of this title (relating to Land Ownership of Tailings or Waste Disposal Sites) have been addressed.

(b) An application for disposal of byproduct material from others shall include information on the chemical and radioactive characteristics of the wastes to be received, detailed procedures for receiving and documenting incoming waste shipments, and detailed waste acceptance criteria.

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### **§336.604. General Requirements for Issuance of a License.**

An application may be approved if the commission determines that the requirements set forth in §336.603 of this title (relating to Filing of Application) have been met and that:

(1) The applicant is qualified by reason of training and experience to use the material in question for the purpose requested in accordance with these rules in this chapter in such a manner as to protect and minimize danger to the public health and safety and the environment;

(2) The applicant's proposed equipment, facilities, and procedures are adequate to protect public health and safety and the environment;

(3) The issuance of the license will not be inimical to public health and safety nor have a long-term detrimental impact on the environment;

(4) The applicant has demonstrated financial capability to conduct the proposed activity, including all costs associated with decommissioning, decontamination, disposal, reclamation, and long-term care and surveillance; and

(5) The applicant satisfies all applicable special requirements in §336.605 of this title (relating to Special Requirements for Issuance of a License).

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**§336.605. Special Requirements for Issuance of a License.**

In addition to the requirements set forth in §336.604 of this title (relating to General Requirements for Issuance of a License), the following conditions shall be met:

(1) An application for a license shall include an environmental report which addresses the following:

(A) description of the proposed project or action;

(B) area/site characteristics including ecology, geology, topography, hydrology, meteorology, historical and cultural landmarks, and archaeology;

(C) radiological and nonradiological impacts of the proposed project or action, including impacts to the public health, impacts on any waterway and groundwater, and any long-term impacts;

(D) environmental effects of accidents;

(E) tailings or waste disposal, decommissioning, decontamination, and reclamation and impacts of these activities; and

(F) site and project alternatives.

(2) Prior to issuance of the license, the applicant shall propose, for approval by the executive director, an acceptable form and amount of financial assurance consistent with the requirements of §336.627 of this title (relating to Financial Assurance Requirements).

(3) The applicant shall provide procedures describing the means that will be employed to conduct operations so that all effluent releases are reduced to as low as is reasonably achievable below the limits of Subchapter D of Chapter 336 of this title (relating to Standards for Protection Against Radiation).

(4) An application for a license shall contain written specifications for the disposition of byproduct material.

(5) The applicant shall provide a closure plan for decontamination, decommissioning, restoration, and reclamation of buildings and the site to levels which would allow unrestricted use and for reclamation of the tailings or waste disposal areas in accordance with the technical requirements of this subchapter and §336.627 of this title (relating to Financial Assurance Requirements).

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**§336.606. Issuance of License.**

(a) Upon a determination that an application meets the requirements of the Texas Radiation Control Act and the rules of this chapter, the commission may issue a license authorizing the proposed activity.

(b) Facilities may be issued a license for in situ uranium recovery as follows:

(1) A license may include only one processing plant (e.g., yellow cake precipitation and/or drying) and its associated mining areas and satellites (e.g., lixiviant-stripping ion exchange units). For purposes of this subsection, a processing plant may be active, inactive, in standby status, or in decommissioning. For the purposes of this subsection, the executive director shall determine whether a separate license is required for a facility that contains only mining areas and associated satellite(s).

(2) A license issued on or before August 1, 1994, need not conform to the requirements of paragraph (1) of this subsection. These licenses may not be amended to add facilities that do not conform to the requirements of paragraph (1) of this subsection.

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**§336.613. Site and Design Requirements.**

(a) Tailings and waste handling and disposal systems shall be designed to accommodate full-capacity production over the lifetime of the facility. When later expansion of systems or operations may be likely, the capability of the disposal system to be modified to accommodate increased quantities without degradation in long-term stability and other performance factors shall be evaluated.

(b) An applicant shall evaluate disposal site selection.

(1) In selecting among alternative tailings or waste disposal sites or judging the adequacy of existing sites, the applicant shall consider the following site features which would contribute to the general goal or broad objective of isolating the tailings or wastes and associated contaminants without ongoing active maintenance:

(A) remoteness from populated areas;

(B) hydrogeologic and other natural or environmental conditions conducive to continued immobilization and isolation of contaminants from groundwater sources; and

(C) potential for minimizing erosion, disturbance, and dispersion by natural forces over the long term.

(2) The site selection process must be an optimization to the maximum extent reasonably achievable in terms of these site features.

(3) In the selection of disposal sites, primary emphasis shall be given to isolation of the tailings or waste, a matter having long-term impacts, as opposed to consideration only of short-term convenience or benefits (e.g., minimization of transportation or land acquisition costs). While isolation of tailings or waste will also be a function of both site and engineering design, overriding consideration shall be given to siting features.

(4) Tailings should be disposed of in a manner that no active maintenance is required to preserve conditions of the site.

(c) To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, waste from uranium recovery facilities using in situ extraction processes and waste from small remote facilities using above-ground extraction processes shall be disposed of at existing large tailings disposal sites. The commission will consider an alternative to this requirement only if the applicant demonstrates that such offsite disposal is impracticable, considering the nature of the waste (e.g., the volume and specific activity) and the costs and environmental impacts of transporting the waste, or that the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

(d) The applicant's environmental report shall evaluate alternative sites and disposal methods and shall consider disposal of tailings by placement below grade. Where full below-grade burial is not practicable, the size of retention structures and size and steepness of slopes associated with exposed embankments shall be minimized by excavation to the maximum extent reasonably achievable or appropriate given the geologic and hydrologic conditions at a site. In these cases, it must be demonstrated that above-grade disposal will provide reasonably equivalent isolation of the tailings or wastes from natural erosional forces.

(e) The following site and design requirements shall be adhered to whether tailings or wastes are disposed of above or below grade:

(1) Upstream rainfall catchment areas must be minimized to decrease erosion potential and the size of floods which could erode or wash out sections of the tailings disposal area;

(2) Topographic features should provide good wind protection;

(3) The embankment and cover slopes shall be relatively flat after final stabilization to minimize erosion potential and to provide conservative factors of safety assuring long-term stability. The objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade. Slopes shall not be steeper than 5 horizontal to 1 vertical (5h:1v), except as specifically authorized by the commission. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable shall be identified;

(4) A full self-sustaining vegetative cover shall be established or rock cover employed to reduce wind and water erosion to negligible levels. Where a full vegetative cover is not likely to be self-sustaining due to climatic or other conditions, such as in semi-arid and arid regions, rock cover shall be employed on slopes of the impoundment system. The commission will consider alternatives to this requirement for extremely gentle slopes, such as those which may exist on the top of the pile.

(5) Individual rock fragments shall be resistant to erosion and weathering action. Local rock materials are permissible provided the characteristics under local climatic conditions indicate similar long-term performance as a protective layer. Weak, friable, or laminated aggregate may not be used. The following factors shall be considered in establishing the final rock cover design to avoid displacement of rock particles by human and animal traffic or by natural processes and to preclude undercutting and piping:

(A) shape, size, composition, and gradation of rock particles (except that bedding material average particle size shall be at least cobble size or greater);

(B) rock cover thickness and zoning of particles by size; and

(C) steepness of underlying slopes.

(6) Alternatives to rock covering of slopes may be considered where top covers are very thick (on the order of 10 meters or greater), impoundment slopes are very gentle (on the order of 10h:1v or less), bulk cover materials have inherently favorable erosion resistance characteristics, there is negligible drainage catchment area upstream of the pile, and there is good wind protection. Furthermore, all impoundment surfaces shall be contoured to avoid areas of concentrated surface runoff or abrupt or sharp changes in slope gradient. In addition to rock cover on slopes, areas toward which surface runoff might be directed shall be well protected with substantial rock cover (rip rap). In addition to providing for stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain shall be evaluated to assure that there are no ongoing or potential processes, such as gully erosion, which would lead to impoundment instability;

(7) The impoundment shall not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand; and

(8) The impoundment should be designed to incorporate features which will promote deposition. Design features which promote deposition of sediment suspended in any runoff which flows into the impoundment area might be utilized. The object of such a design feature would be to enhance the thickness of cover over time.

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#### **§336.614. Groundwater Protection.**

The groundwater protection requirements in this section and those in §336.615 of this title (relating to Secondary Groundwater Protection), §336.616 of this title (relating to Corrective Action Program), and §336.636, Appendix A, of this title (relating to Maximum Concentrations for Groundwater Protection) apply

during operations and until closure is completed. Groundwater monitoring to comply with these standards is required by §336.623 of this title (relating to Monitoring Requirements).

(1) The primary groundwater protection standard is a design standard for surface impoundments used to manage uranium and thorium byproduct material. Unless exempted under paragraph (3) of this section, surface impoundments (except for an existing portion) shall have a liner that is designed, constructed, and installed to prevent any migration of wastes out of the impoundment to the adjacent subsurface soil, groundwater, or surface water at any time during the active life (including the closure period) of the impoundment. The liner may be constructed of materials that may allow wastes to migrate into the liner (but not into the adjacent subsurface soil, groundwater, or surface water) during the active life of the facility, provided that impoundment closure shall include removal or decontamination of all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate. For impoundments that will be closed with the liner material left in place, the liner shall be constructed of materials that can prevent wastes from migrating into the liner during the active life of the facility.

(2) The liner required by paragraph (1) of this section shall be:

(A) constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the wastes or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(B) placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and

(C) installed to cover all surrounding earth likely to be in contact with the wastes or leachate.

(3) The applicant or licensee will be exempted from the requirements of paragraph (1) of this section if the commission finds, based on a demonstration by the applicant or licensee, that alternate design and operating practices, including the closure plan, together with site characteristics will prevent the migration of any hazardous constituents into groundwater or surface water at any future time. In deciding whether to grant an exemption, the commission will consider:

(A) the nature and quantity of the wastes;

(B) the proposed alternate design and operation;

(C) the hydrogeologic setting of the facility, including the attenuative capacity and thickness of the liners and soils present between the impoundment and groundwater or surface water; and

(D) all other factors which would influence the quality and mobility of the leachate produced and the potential for it to migrate to groundwater or surface water.

(4) A surface impoundment shall be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations, overfilling, wind and wave actions, rainfall, or runoff; from malfunctions of level controllers, alarms, and other equipment; and from human error.

(5) When dikes are used to form the surface impoundment, the dikes shall be designed, constructed, and maintained with sufficient structural integrity to prevent massive failure of the dikes. In ensuring structural integrity, it shall not be presumed that the liner system will function without leakage during the active life of the impoundment.

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**§336.615. Secondary Groundwater Protection.**

(a) Uranium and thorium byproduct materials shall be managed to conform to the following secondary groundwater protection standard: hazardous constituents, as defined in §336.602 of this title (relating to Definitions), entering the groundwater from a licensed site must not exceed the specified concentration limits in the uppermost aquifer beyond the point of compliance during the compliance period. Specified concentration limits are those limits established by the commission as indicated in subsection (d) of this section. The commission will also establish the point of compliance and compliance period on a site-specific basis through license conditions or orders. When the detection monitoring established under §336.623 of this title (relating to Monitoring Requirements) indicates leakage of hazardous constituents from the disposal area, the commission will identify hazardous constituents, establish concentration limits, and set the compliance period and may adjust the point of compliance if needed in accordance with developed data and site information regarding the flow of groundwater or contaminants.

(b) Even when constituents meet all three tests in the definition of hazardous constituent in §336.602 of this title (relating to Definitions), the commission may exclude a detected constituent from the set of hazardous constituents on a site-specific basis if it finds that the constituent is not capable of posing a substantial present or potential hazard to human health or the environment. In deciding whether to exclude constituents, the commission will consider the following:

(1) potential adverse effects on groundwater quality, considering the:

(A) physical and chemical characteristics of the waste in the licensed site, including its potential for migration;

(B) hydrogeological characteristics of the licensed site and surrounding land;

(C) quantity of groundwater and the direction of groundwater flow;

(D) proximity of groundwater users and groundwater withdrawal rates;

(E) current and future uses of groundwater in the area;

(F) existing quality of groundwater, including other sources of contamination and cumulative impact on the groundwater quality;

(G) potential for human health risks caused by human exposure to waste constituents;

(H) potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(I) persistence and permanence of potential adverse effects.

(2) potential adverse effects on quality of hydraulically-connected surface water, considering the:

(A) volume and physical and chemical characteristics of the byproduct material in the licensed site;

(B) hydrogeological characteristics of the licensed site and surrounding land;

(C) quantity and quality of groundwater and the direction of groundwater flow;

(D) patterns of rainfall in the region;

(E) proximity of the licensed site to surface waters;

(F) current and future uses of surface waters in the area and any water quality standards established for those surface waters;

(G) existing quality of surface water, including other sources of contamination and the cumulative impact on surface water quality;

(H) potential for human health risks caused by human exposure to waste constituents;

(I) potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituents; and

(J) persistence and permanence of the potential adverse effects.

(c) In making any determinations under subsections (b) and (e) of this section about the use of groundwater in the area around the facility, the commission will consider any identification of underground sources of drinking water and exempted aquifers made by the United States Environmental Protection Agency and the commission.

(d) At the point of compliance, the concentration of a hazardous constituent shall not exceed:

(1) the commission-approved background concentration of that constituent in the groundwater;

(2) the respective concentration given in §336.636, Appendix A, of this title (relating to Maximum Concentrations for Groundwater Protection), if the constituent is listed in the table and if the background level of the constituent is below the value listed; or

(3) an alternate concentration limit established by the commission.

(e) Alternate concentration limits to background concentrations or to the drinking water limits in §336.636, Appendix A, of this title that present no significant hazard may be proposed by licensees for commission consideration. Licensees shall provide the basis for any proposed limits including consideration of practicable corrective actions, evidence that limits are as low as reasonably achievable, and information on the factors the commission must consider. The commission will establish a site-specific alternate concentration limit for a hazardous constituent, as provided in subsection (d) of this section, if it finds that the proposed limit is as low as reasonably achievable, after considering practicable corrective actions, and that the constituent will not pose a substantial present or potential hazard to human health or the environment as long as the alternate concentration limit is not exceeded. In making the finding relating to present and potential hazard, the commission will consider the factors listed in subsection (b)(1) and (2) of this section.

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#### **§336.616. Corrective Action Program.**

(a) If the groundwater protection standards established under §336.615 of this title (relating to Secondary Groundwater Protection) are exceeded at a licensed site, a corrective action program must be put into operation as soon as is practicable, in accordance with the procedures set forth in this section.

(b) If compliance monitoring conducted pursuant to §336.623(c) of this title (relating to Monitoring Requirements) indicates that a groundwater protection standard may be exceeded, the licensee shall notify the executive director. Following a review of monitoring data and any other pertinent information, the executive director will make a determination as to whether a groundwater protection standard has been exceeded. The licensee shall submit for commission approval a proposed corrective action program and the supporting rationale by the date specified by the executive director. The objective of the corrective action program is to reduce hazardous constituent concentration levels in the groundwater to achieve compliance with the concentration limits set as standards. The licensee's proposed program must address removing the hazardous constituents in the groundwater at the point of compliance or treating in place. The licensee's proposed program must also address removing or treating in place any hazardous constituents that exceed concentration limits in groundwater between the point of compliance and the downgradient licensed site boundary.

(c) The licensee shall obtain commission approval, through license amendment, prior to putting the proposed corrective action program into operation, unless otherwise directed by the executive director. Upon commission approval of a corrective action program, the licensee shall implement the approved program as specified by license condition. In no event shall the implementation of a corrective action program begin later than 18 months after the executive director makes a determination that the groundwater protection standards

have been exceeded. If necessary, the commission by order or the executive director may direct that the licensee begin implementing interim corrective measures, prior to approval of the licensee's proposed program through license amendment.

(d) The licensee shall continue corrective action measures to the extent necessary to achieve and maintain compliance with the groundwater protection standard. The commission will determine when the licensee may terminate corrective action measures based on data from the groundwater monitoring program and other information that provides reasonable assurance that the groundwater protection standard will not be exceeded.

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**§336.617. Other Considerations for Groundwater Protection.**

In developing and conducting groundwater protection programs, applicants and licensees shall also consider the following:

(1) installation of bottom liners. Where synthetic liners are used, a leakage-detection system shall be installed immediately below the liner to ensure detection of any major failures. This is in addition to the groundwater monitoring program conducted as provided in §336.623(b) of this title (relating to Monitoring Requirements). Where clay liners are proposed or relatively thin, in situ clay soils are to be relied upon for seepage control, tests shall be conducted with representative tailings solutions and clay materials to confirm that no significant deterioration of permeability or stability properties will occur with continuous exposure of clay to tailing solutions. Tests shall be run for a sufficient period of time to reveal any effects that may occur;

(2) mill process designs which provide the maximum practicable recycle of solutions and conservation of water to reduce the net input of liquid to the tailings impoundment;

(3) dewatering of tailings by process devices and/or in situ drainage systems. At new sites, tailings shall be dewatered by a drainage system installed at the bottom of the impoundment to lower the phreatic surface and reduce the driving head of seepage, unless tests show tailings are not amenable to such a system. Where in situ dewatering is to be conducted, the impoundment bottom shall be graded to assure that the drains are at a low point. The drains shall be protected by suitable filter materials to assure that drains remain free-running. The drainage system shall also be adequately sized to assure good drainage; and

(4) neutralization to promote immobilization of hazardous constituents.

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**§336.618. Seepage Control Systems.**

If adverse groundwater impacts or conditions conducive to adverse groundwater impacts occur due to seepage, action shall be taken to alleviate the impacts or conditions and to restore groundwater quality to levels consistent with those before operations began. The specific seepage control and groundwater protection method, or combination of methods, to be used shall be worked out on a

site-specific basis. Technical specifications shall be prepared for installation of seepage control systems. A quality assurance, testing, and inspection program, which includes supervision by a qualified engineer or scientist, shall be established to assure that specifications are met.

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**§336.619. Tailings or Waste Disposal System.**

In support of a proposal for a tailings or waste disposal system, the applicant or licensee shall supply the following information:

(1) the chemical and radioactive characteristics of the tailings or wastes;

(2) the characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions. This shall include detailed information concerning extent, thickness, uniformity, shape, and orientation of underlying strata. Hydraulic gradients and conductivities of the various formations shall be determined. This information shall be gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to groundwater. The information gathered on boreholes shall include both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity. If field survey methods are used, they should be in addition to and calibrated with borehole logging. Hydrologic parameters such as permeability shall not be determined on the basis of laboratory analysis of samples alone. A sufficient amount of field testing (e.g., pump tests) shall be conducted to assure actual field properties are adequately understood. Testing shall be conducted to make possible estimates of chemisorption attenuation properties of underlying soil and rock; and

(3) the location, extent, quality, capacity, and current uses of any groundwater at and near the site.

Adopted May 14, 1997

Effective June 5, 1997

**§336.620. Ore Stockpiling.**

If ore is stockpiled, methods shall be used to minimize penetration of radionuclides and other substances into underlying soils.

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**§336.621. Disposal Area Cover and Closure.**

(a) In disposing of tailings or wastes, licensees shall place an earthen cover over the tailings or wastes at the end of the uranium or thorium recovery operations and shall close the tailings or waste disposal area in accordance with a design which provides reasonable assurance of control of radiological hazards. In the case of thorium byproduct materials, the standard applies only to design. Monitoring for radon emissions

from thorium byproduct materials after installation of an appropriately designed cover is not required. The design must provide reasonable assurance that control of radiological hazards will:

(1) be effective for 1,000 years, to the extent reasonably achievable and, in any case, for at least 200 years; and

(2) limit releases of radon-222 from uranium byproduct materials and radon-220 from thorium byproduct materials to the atmosphere so as not to exceed an average release rate of 20 picocuries/square meter/second (pCi/m<sup>2</sup>s) to the extent practicable throughout the effective design life determined pursuant to paragraph (1) of this subsection. This average applies to the entire surface of each disposal area over a period of at least one year, but a period short compared to 100 years. Radon will come from both byproduct materials and cover materials. Radon emissions from cover materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from byproduct materials to the atmosphere.

(b) In computing required tailings or waste cover thicknesses, moisture in soils in excess of amounts found normally in similar soils in similar circumstances may not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer may not be taken into account in determining the calculated radon exhalation level. If non-soil materials are proposed as cover materials, the licensee must demonstrate that these materials will not crack or degrade by differential settlement, weathering, or other mechanisms over long-term intervals.

(c) As soon as reasonably achievable after emplacement of the final cover to limit releases of radon-222 from uranium byproduct material and prior to placement of erosion protection barriers or other features necessary for long-term control of the tailings, the licensee shall verify through appropriate testing and analysis that the design and construction of the final radon barrier is effective in limiting releases of radon-222 to a level not exceeding 20 pCi/m<sup>2</sup>s averaged over the entire pile or impoundment using the procedures described in Appendix B, Method 115 of 40 CFR Part 61 as amended through April 25, 1996 (61 FedReg 18278) (relating to Monitoring for Radon-222 Emissions), or another method of verification approved by the United States Nuclear Regulatory Commission as being at least as effective in demonstrating the effectiveness of the final radon barrier.

(d) When phased emplacement of the final radon barrier is included in the applicable reclamation plan, as defined in §336.602 of this title (relating to Definitions), the verification of radon-222 release rates required in subsection (c) of this section must be conducted for each portion of the pile or impoundment as the final radon barrier for that portion is emplaced.

(e) Within 90 days of the completion of all testing and analysis relevant to the required verification in subsections (c) and (d) of this section, the uranium recovery licensee shall report to the executive director the results detailing the actions taken to verify that levels of release of radon-222 do not exceed 20 pCi/m<sup>2</sup>s when averaged over the entire pile or impoundment. The licensee shall maintain records documenting the source of input parameters, including the results of all measurements on which they are based, the calculations and/or analytical methods used to derive values for input parameters, and the procedure used to determine compliance. These records shall be maintained until termination of the license and shall be kept in a form suitable for transfer to the custodial agency at the time of transfer of the site to the State or the United States pursuant to §336.629 of this title (relating to Land Ownership of Tailings or Waste Disposal Sites).

(f) Near-surface cover materials may not include waste, rock, or other materials that contain elevated levels of radium. Soils used for near-surface cover must be essentially the same, as far as radioactivity is concerned, as surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

(g) The design requirements in this section for longevity and control of radon releases apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 m<sup>2</sup>, which, as a result of byproduct material, does not exceed the background level by more than:

(1) five picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 centimeters (cm) below the surface; and

(2) 15 pCi/g of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over 15-cm thick layers more than 15 cm below the surface.

(h) The licensee shall also address the nonradiological hazards associated with the tailings or wastes in planning and implementing closure. The licensee shall ensure that disposal areas are closed in a manner that minimizes the need for further maintenance. To the extent necessary to prevent threats to human health and the environment, the licensee shall control, minimize, or eliminate post-closure escape of nonradiological hazardous constituents, leachate, contaminated rainwater, or waste decomposition products to groundwater, surface waters, or the atmosphere.

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#### **§336.622. Closure Completion Milestones and Schedule.**

(a) For impoundments containing uranium byproduct materials, the final radon barrier must be completed as expeditiously as practicable considering technological feasibility after the pile or impoundment ceases operation in accordance with a written reclamation plan, as defined in §336.602 of this title (relating to Definitions), approved by the commission by license amendment. (The term "as expeditiously as practicable considering technological feasibility" as specifically defined in §336.602 of this title includes "factors beyond the control of the licensee" as defined.) Deadlines for completion of the final radon barrier and applicable interim milestones must be established as license conditions. Applicable interim milestones may include, but are not limited to, the retrieval of windblown tailings and placement on the pile and the interim stabilization of the tailings or wastes (including dewatering or the removal of freestanding liquids and recontouring). The placement of erosion protection barriers or other features necessary for long-term control of the tailings or wastes must also be completed in a timely manner in accordance with a written reclamation plan approved by the commission by license amendment.

(b) The commission may approve by license amendment a licensee's request to extend the time for performance of milestones related to emplacement of the final radon barrier if, after providing an opportunity for public participation, the commission finds that the licensee has adequately demonstrated in the manner required in §336.621(c) of this title (relating to Disposal Area Cover and Closure) that releases of radon-222 do not exceed an average of 20 pCi/m<sup>2</sup>s. If the delay is approved on the basis that the radon releases do not exceed 20 pCi/m<sup>2</sup>s, a verification of radon levels, as required by §336.621(c) of this title, must be made

annually during the period of delay. In addition, once the commission has established the date in the reclamation plan for the milestone for completion of the final radon barrier, the commission may by license amendment extend that date based on cost if, after providing an opportunity for public participation, the commission finds that the licensee is making good faith efforts to emplace the final radon barrier, the delay is consistent with the definition of "available technology," as given in §336.2 of this title (relating to Definitions) and the radon releases caused by the delay will not result in a significant incremental risk to the public health.

(c) The commission may authorize by license amendment, upon licensee request, a portion of the impoundment to accept uranium byproduct material, as defined in 10 CFR Part 40 as amended through July 15, 1994 (59 FedReg 36035) (relating to Domestic Licensing of Source Material), or such materials that are similar in physical, chemical, and radiological characteristics to the uranium mill tailings and associated wastes already in the pile or impoundment, from other sources during the closure process. No such authorization will be made if it results in a delay or impediment to emplacement of the final radon barrier over the remainder of the impoundment in a manner that will achieve levels of radon-222 releases not exceeding 20 pCi/m<sup>2</sup>s averaged over the entire impoundment. The verification required in §336.621(c) of this title may be completed with a portion of the impoundment being used for further disposal if the commission makes a final finding that the impoundment will continue to achieve a level of radon-222 releases not exceeding 20 pCi/m<sup>2</sup>s averaged over the entire impoundment. After the final radon barrier is complete except for the continuing disposal area, only byproduct material as defined in 10 CFR Part 40 as amended through July 15, 1994 (59 FedReg 36035) will be authorized for disposal, and the disposal will be limited to the specified existing disposal area. This authorization by license amendment will only be made after providing opportunity for public participation. Reclamation of the disposal area, as appropriate, must be completed in a timely manner after disposal operations cease in accordance with §336.621(a) of this title. These actions are not required to be complete as part of meeting the deadline for final radon barrier construction.

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### **§336.623. Monitoring Requirements.**

(a) Prior to commencement of construction, a pre-operational monitoring program shall be conducted for one full year to provide complete baseline data on the site and its environs. Throughout the construction and operating phases of the project, an operational monitoring program shall be conducted to measure or evaluate compliance with applicable standards and rules; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long-term effects.

(b) For purposes of the secondary groundwater protection program under §336.615 of this title (relating to Secondary Groundwater Protection), the licensee shall establish a detection monitoring program. The licensee or applicant shall propose, for commission approval as license conditions, which constituents are to be monitored on a site-specific basis. The initial purpose of the detection monitoring program is to detect leakage of hazardous constituents from the disposal area so that the need to set groundwater protection standards is monitored. The second purpose of the detection monitoring program is to generate data and information needed for the commission to establish the site-specific standards under §336.615 of this title, if leakage of hazardous constituents is detected. The data and information shall provide a sufficient basis to identify those hazardous constituents which require concentration limit standards and to enable the

commission to set the limits for those constituents and the compliance period. The data and information may also provide the basis for adjustments to the point of compliance. The detection monitoring programs must be in place when specified by the commission in orders or license conditions. Once groundwater protection standards have been established under §336.615 of this title, the licensee shall establish and implement a compliance monitoring program. The purpose of the compliance monitoring program is to determine that the hazardous constituent concentrations in groundwater continue to comply with the standards set by the commission. In conjunction with a corrective action program established under §336.616 of this title (relating to Corrective Action Program), the licensee shall establish and implement a corrective action monitoring program to demonstrate the effectiveness of the corrective actions. Any monitoring program required by this subsection may be based on existing monitoring programs to the extent the existing programs can meet the stated objective for the program.

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**§336.624. Airborne Emission and Discharge Control Requirements.**

(a) Facilities shall be designed and operations shall be conducted so that all airborne effluent releases are as low as is reasonably achievable. The primary means of accomplishing this shall be by means of emission controls. Institutional controls, such as extending the site boundary and exclusion area, may be employed to ensure that offsite exposure limits are met, but only after all practicable measures have been taken to control emissions at the source. Notwithstanding the existence of individual dose standards, strict control of emissions is necessary to assure that population exposures are reduced to the maximum extent reasonably achievable and to avoid site contamination.

(b) During operations and prior to closure, radiation doses from radon emissions from surface impoundments of uranium or thorium byproduct materials must be kept as low as is reasonably achievable.

(c) Checks shall be made and logged hourly of all parameters which determine the efficiency of emission control equipment operation. It shall be determined whether or not conditions are within a range prescribed to ensure that the equipment is operating consistently near peak efficiency. Corrective action shall be taken when performance is outside of prescribed ranges. Effluent control devices shall be operative at all times during drying and packaging operations and whenever air is exhausting from the stack. Drying and packaging operations shall terminate when controls are inoperative. When checks indicate the equipment is not operating within the range prescribed for peak efficiency, actions shall be taken to restore parameters to the prescribed range. When this cannot be done without shutdown and repairs, drying and packaging operations shall cease as soon as practicable. Operations may not be restarted after cessation due to off-normal performance until needed corrective actions have been identified and implemented. All such cessations, corrective actions, and restarts shall be reported to the executive director in writing within 10 days of the subsequent restart.

(d) To control dusting from tailings or wastes, that portion not covered by standing liquids shall be wetted or chemically stabilized to prevent or minimize blowing and dusting to the maximum extent reasonably achievable. This requirement may be relaxed if tailings or wastes are effectively sheltered from wind, such as may be the case with below-grade disposal. Consideration shall be given in planning tailings or waste disposal programs to methods which would allow phased covering and reclamation of tailings or waste

impoundments. To control dusting from diffuse sources, the applicant or licensee shall develop written operating procedures specifying the methods of control which will be utilized.

(e) Milling operations producing or involving thorium byproduct material shall be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as a result of exposures to the planned discharge of radioactive materials to the general environment, radon-220 and its daughters excepted.

(f) Uranium and thorium byproduct materials must be managed so as to conform to the applicable provisions of 40 CFR Part 440 (relating to Ore Mining and Dressing Point Source Category), as amended through January 1, 1983.

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#### **§336.625. Daily Inspections of Tailings or Waste Retention Systems.**

Daily inspections of tailings or waste retention systems shall be conducted by a qualified individual and documented. General qualifications for such individuals conducting such inspections shall be included in the license application submitted under §336.603 of this title (relating to Filing of Application). Records of the inspections shall be maintained for inspection by the executive director.

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#### **§336.626. Requirement Alternatives.**

(a) The licensee or applicant may propose alternatives to the specific technical requirements in this subchapter, §§336.627-336.629 of this title (relating to Financial Assurance Requirements, Long-Term Care and Surveillance Requirements, and Land Ownership of Tailings or Waste Disposal Sites). The alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology.

(b) The commission may find that the proposed alternatives meet the commission's requirements if the alternatives will achieve a level of stabilization and containment of the sites concerned and a level of protection for the public health and safety and the environment from radiological and nonradiological hazards associated with the sites which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the technical requirements of this subchapter, §§336.627-336.629 of this title, and the standards promulgated by the United States Environmental Protection Agency in 40 CFR Part 192, Subpart D (as amended through November 15, 1993 (58 FedReg 60355)) and Subpart E (as amended through January 11, 1995 (60 FedReg 2868)) (relating to Standards for Management of Uranium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended; and Standards for Management of Thorium Byproduct Materials Pursuant to Section 84 of the Atomic Energy Act of 1954, as Amended; respectively).

(c) All site-specific licensing decisions based on the criteria in the technical requirements of this subchapter, §§336.627-336.629 of this title, or alternatives proposed by a licensee or applicant shall take

into account the risk to the public health and safety and the environment with due consideration to the economic costs involved and any other factors the commission determines to be appropriate.

(d) Any proposed alternatives to the specific technical requirements in this subchapter, §§336.627-336.629 of this title, must be approved by the United States Nuclear Regulatory Commission with notice and opportunity for public hearing as required in 10 CFR 150.31(d) as amended through November 24, 1992 (57 FedReg 55081) (relating to Requirements for Agreement State Regulation of Byproduct Material).

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**§336.627. Financial Assurance Requirements.**

(a) Financial assurance, or security, for decontamination, decommissioning, reclamation, restoration, disposal, and any other requirements of the commission shall be established at least 60 days before commencement of operations.

(b) Financial assurance mechanisms submitted to comply with this section shall meet the requirements specified in Subchapter I of Chapter 336 of this title (relating to Financial Assurance).

(c) Financial assurance planning and cost estimating shall be completed.

(1) The amount of funds to be ensured by the financial assurance arrangement shall be based on cost estimates approved by the executive director which are based on a commission-approved plan to carry out:

(A) decontamination, decommissioning, restoration, and reclamation of buildings and the site to levels which would allow unrestricted use; and

(B) the reclamation of the tailings and waste disposal areas in accordance with the technical requirements of this subchapter.

(2) The applicant shall submit a closure plan covering the requirements of paragraph (1)(A) and (B) of this subsection, including the cost estimates, in conjunction with the environmental report that addresses the expected environmental impacts of operations of the uranium or thorium recovery facility, decommissioning, and tailings reclamation and that evaluates alternatives for mitigating these impacts.

(3) The applicant's cost estimates shall take into account the total costs that would be incurred if an independent contractor were hired to perform the decontamination, decommissioning, restoration, and reclamation.

(d) The financial assurance shall also cover the payment of the charge for long-term care and surveillance, as required under §336.628 of this title (relating to Long-Term Care and Surveillance Requirements).

(e) The licensee's financial assurance will be reviewed annually by the executive director to assure that sufficient funds will be available for completion of the closure plan, assuming that the work has to be

performed by an independent contractor. The licensee shall submit current cost estimates to the executive director annually at least 60 days before the expiration month and day (anniversary date) of the license. The amount of financial assurance shall be adjusted to recognize any increases or decreases resulting from inflation, changes in engineering plans, activities performed, and any other conditions affecting costs. Regardless of whether reclamation is phased through the life of the operation or takes place at the end of operations, an appropriate portion of the financial assurance shall be retained until final compliance with the closure plan is determined by the executive director. The amount of financial assurance shall be sufficient at all times to cover the costs of decontamination, decommissioning, restoration, and reclamation of buildings and the site affected by activities to date and by activities that are reasonably expected to occur before the next annual review.

(f) After the licensee notifies the executive director that decontamination, decommissioning, reclamation, restoration, and disposal have been completed and requests termination of the license in accordance with §336.217 of this title (relating to Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas), the executive director shall determine whether these activities have been conducted and completed in accordance with the requirements of §336.217 of this title and the conditions of the license. If the executive director finds that the requirements have been met and the commission terminates the license, the executive director shall direct the return or release of the licensee's financial assurance.

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**§336.628. Long-Term Care and Surveillance Requirements.**

(a) Unless otherwise provided by the commission, each licensee under this subchapter shall make a payment into the Radiation and Perpetual Care Fund in an amount specified by the executive director to cover the costs of long-term care, surveillance, and, where necessary, maintenance. The executive director shall make such determinations on a case-by-case basis.

(b) The minimum charge to cover the costs of long-term care and surveillance shall be \$250,000 (1978 dollars). The final disposition of tailings or wastes should be such that ongoing active maintenance is not required to preserve conditions of the site and isolation of the tailings or wastes. If site surveillance, control, or maintenance requirements at a particular site are determined, on the basis of site-specific evaluation, to be significantly greater (e.g., if fencing or monitoring is determined to be necessary), the executive director may specify a higher charge.

(c) The total charge must be such that, with an assumed 1.0% annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site care, surveillance, and, where necessary, maintenance. Prior to actual payment, the total charge will be adjusted annually for inflation, as specified in §336.803(b) of this title (relating to Financial Assurance Requirements).

(d) The total charge shall be paid prior to or at the time of the termination of the license. During the term of the license, the total charge shall be covered by financial assurance as specified in §336.627 of this title (relating to Financial Assurance Requirements) and Subchapter I of Chapter 336 of this title (relating to Financial Assurance).

(e) The requirements of this section shall apply only to those sites whose ownership is subject to being transferred to the State or the United States. The total amount of funds collected by the State pursuant to this section shall be transferred to the United States if title and custody of the tailings and waste disposal site is transferred to the United States upon termination of the license.

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**§336.629. Land Ownership of Tailings or Waste Disposal Sites.**

(a) These criteria relating to ownership of tailings or wastes and their disposal sites apply to all licenses terminated, issued, or renewed after November 8, 1981.

(b) Any license for a uranium or thorium recovery facility must contain such terms and conditions as the commission determines necessary to assure that, prior to termination of the license, the licensee will comply with ownership requirements of this section for sites used for tailings or waste disposal.

(c) Unless exempted by the United States Nuclear Regulatory Commission, title to byproduct material licensed under this subchapter and land, including any affected interests therein, (other than land owned by the State or the United States) which is used for the disposal of byproduct material, or is essential to ensure the long-term stability of the disposal site, shall be transferred to the State or the United States, at the option of the State, prior to the termination of the license. In view of the fact that physical isolation must be the primary means of long-term control, and government land ownership is a desirable supplementary measure, ownership of certain severable subsurface interests (e.g., mineral rights) may be determined to be unnecessary to protect the public health and safety and the environment. In any case, however, the applicant or licensee shall demonstrate a serious effort to obtain such subsurface rights and shall, in the event that certain rights cannot be obtained, provide notification in local public land records of the fact that the land is being used for the disposal of radioactive material and is subject to a United States Nuclear Regulatory Commission license prohibiting the disruption and disturbance of the tailings or wastes. In some rare cases, such as may occur with deep burial where no ongoing site surveillance will be required, surface land ownership transfer requirements may be waived by the United States Nuclear Regulatory Commission. For licenses issued before November 8, 1981, the United States Nuclear Regulatory Commission may take into account the status of the ownership of such land, and interests therein, and the ability of a licensee to transfer title and custody thereof to the State or the United States.

(d) If the United States Nuclear Regulatory Commission subsequent to title transfer determines that use of the surface or subsurface estates, or both, of the land transferred to the State or the United States will not endanger the public health and safety or the environment, the United States Nuclear Regulatory Commission may permit the use of the surface or subsurface estates, or both, of such land in a manner consistent with the provisions of this subchapter. If the United States Nuclear Regulatory Commission permits such use of such land, it will provide the person who transferred such land with the right of first refusal with respect to such use of such land.

(e) Material and land transferred to the State or the United States in accordance with this section must be transferred without cost to the State or United States, other than administrative and legal costs incurred in carrying out such transfer.

(f) The provisions of this section regarding transfer of title and custody to land and tailings and wastes do not apply in the case of lands held in trust by the United States for any Indian tribe or lands owned by such Indian tribe subject to a restriction against alienation imposed by the United States. In such cases, the licensee shall enter into arrangements with the United States Nuclear Regulatory Commission as may be appropriate to assure long-term surveillance.

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**§336.636. Appendix A. Maximum Concentrations for Groundwater Protection. Figure 1: 30 TAC §336.636, Appendix A.**

Maximum Concentrations For Groundwater Protection

Constituent or Property	Maximum Concentration
<b>Milligrams per liter:</b>	
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Selenium	0.01
Silver	0.05
Endrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene)	0.0002
Lindane (1,2,3,4,5,6-hexachlorocyclohexane, gamma isomer)	0.004
Methoxychlor (1,1,1-trichloro-2,2-bis-[p-methoxyphenyl]ethane)	0.1
Toxaphene (C <sub>10</sub> H <sub>10</sub> Cl <sub>8</sub> , technical chlorinated camphene, 67-69% chlorine)	0.005
2,4-D (2,4-dichlorophenoxyacetic acid)	0.1
2,4,5-TP (Silvex) (2,4,5-trichlorophenoxy-propionic acid)	0.01
<b>Picocuries per liter:</b>	
Combined radium-226 and radium-228	5
Gross alpha-particle activity (excluding radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material)	15